



# Applicability of Superfund Data Categories to the Removal Program

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The Office of Emergency and Remedial Response (OERR) is revising its *Quality Assurance/Quality Control Guidance for Removal Activities* to address changes in Agency-wide quality assurance policies. Additionally, concepts described in the Removal Guidance have been modified by a 1993 OERR document, *Data Quality Objectives Process for Superfund*. The 1990 Removal Guidance referred to three “quality assurance objectives” (known as QA1, QA2, and QA3). The 1993 document replaced those codes with alternative, more descriptive terms, *Screening Data*, *Screening Data with Definitive Confirmation*, and *Definitive Data*, known collectively as Superfund Data Categories. For each data collection activity, the Superfund data category or categories should be specified to correspond to the data use objectives.

## INTRODUCTION

In April 1990, the Office of Emergency and Remedial Response (OERR) prepared the Office of Solid Waste and Emergency Response (OSWER) Directive 9360.4-01, *Quality Assurance/Quality Control Guidance for Removal Activities* (the Removal Guidance). It was based on then-current Agency-wide quality assurance (QA) policies.

Since then, the following Agency-wide quality assurance documents were issued in May 2001:

- EPA Order 5360.1 *Agency-Wide Quality Assurance and Program Requirements for the Mandatory Agency-Wide Quality Assurance System* (the revised Quality Assurance System and
- EPA 5360 A1, the *EPA Quality Manual for Environmental Programs* (the Quality Manual).

OERR is recognizing the need to update the Removal Guidance to reflect these Agency-wide policy changes. As part of the process of revising the Removal Guidance, OERR is issuing a series of QA Technical Information Bulletins focusing on some of the more significant QA

changes impacting the Removal program.\*

## DATA CATEGORIES

Three Data Categories have been defined for assessing and substantiating analytical data obtained to support their intended use in the Removal program. The three Data Categories, hereafter referred to as *Screening Data*, *Screening Data with Definitive Confirmation*, and *Definitive Data* are described below. Changes in the Removal program are structured around the three analytical Data Categories, which replace the three “quality assurance objectives” (i.e., QA1, QA2, and QA3) discussed in the April 1990 edition. These Data Categories are referred to as “Superfund Data Categories” in the OSWER Directive 9355.9-01, *Data Quality Objectives Process for Superfund*, September 1993. For each data collection activity, the data category(ies) should be specified to correspond to the data use objectives.

Technically, there are two Superfund Data Categories described in the 1993 OSWER Directive, Definitive Data and Screening Data. The “Screening” Superfund Data Category has two sub-categories: “with Definitive

\* The discussion in this document is intended solely as guidance. This document is not a regulation. It does not impose binding legal requirements. EPA retains the right to adopt approaches on a case-by-case basis that differ from those described in this guidance, where appropriate. This guidance document interprets Agency policies on quality assurance. This guidance document may be revised without notice.

Confirmation” and “without Definitive Confirmation.”

### ***What are “Screening Data”?***

*Screening data* are generated by rapid, less precise methods of analysis with less rigorous sample preparation. Screening data provide analyte (or at least chemical class) identification and quantification, although the quantification may be relatively imprecise. For definitive confirmation, at least 10 percent of the screening data are confirmed using analytical methods and quality control procedures and criteria associated with definitive data. *Screening data without associated confirmation data are generally not considered to be data of known quality.* Screening data without confirmation data are only allowed under limited circumstances, and will be discussed later.

### ***What are “Definitive Data”?***

*Definitive data* are generated using rigorous analytical methods, such as EPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. Methods generating definitive data produce tangible raw data (e.g., chromatograms, spectra, digital values) in the form of paper printouts or computer-generated electronic files. Data may be generated at the site or at an off-site location, as long as the quality control requirements are satisfied. For the data to be definitive, either analytical or total measurement error must be determined. (See Table 1.)

### ***Requirements for the Data Categories***

Each Data Category has associated minimum requirements (see Table 1.) Therefore, a method or analytical instrument that can meet the quality requirements can be used for each one of the Data Categories. For example, a mass spectrometer method met all the requirements for Definitive Data (i.e., identify the specific analyte, determine the true concentration, and determine the error), then the spot test would not only be a valid method but would give the same quality of data as would the mass spectrometer.

### ***Data Category Most Relevant to the Removal Program***

“Screening Data with Definitive Confirmation” and “Screening Data with Definitive Confirmation” provide useful and valid data for enforcement purposes, disposal and/or treatment, responsible party identification, and cleanup verification.

It is anticipated that “Screening Data with Definitive Confirmation” will satisfy most data quality requirements for the Removal program. The Data Category “Definitive Data” is expected to be used only in those cases where an

**Table 1: Requirements of the Data Categories (Analytical Data)**

<b>Screening Data With Definitive Confirmation</b>	<b>Definitive Data</b>
Sample documentation (location, date and time collected, batch, etc.)	Sample documentation (location, date and time collected, batch, etc.)
Chain of custody (when appropriate)	Chain of custody (when appropriate)
Sampling design approach (systematic, simple or stratified random, judgmental, etc.)	Sampling design approach (systematic, simple or stratified random, judgmental, etc.)
Initial and continuing calibration	Initial and continuing calibration
Determination and documentation of detection limits	Determination and documentation of detection limits
Analyte(s) identification	Analyte(s) identification
Analyte(s) quantification	Analyte(s) quantification
	Quality control (QC) blanks (trip, rinsate, method)
	Matrix spike recoveries
	Performance Evaluation (PE) samples (when specified)
Analytical error determination <sup>1</sup>	Analytical error determination <sup>1</sup>
Definitive confirmation <sup>2</sup>	Total measurement error determination <sup>3</sup>
SOURCE: OSWER Directive 9355.9-01, <i>Data Quality Objectives Process for Superfund</i> , September 1993.	

error determination is needed to identify false negative or false positive values for critical decision level concentrations. The Data Category “Screening Data” (without confirmation) has only limited use, specifically for the following:

- Emergencies;
- Health and safety screening using, for example, Jerome

Mercury Vapor analyzer, Industrial Scientific multi-gas monitor, or RAE Systems MultiRAE organic vapor monitor (OVM), and other techniques;<sup>‡</sup>

- Real-time field data to supplement analytical data (e.g., “sniffing” a monitoring well with an OVM prior to sampling or measuring pH, dissolved oxygen and/or conductivity at the time of sampling);
- Field sample locational decisions, i.e., collecting screening data to determine in real time where to collect judgmental samples for definitive data collection;
- Waste profiling; and
- Preliminary identification and quantitation of pollutants.

#### **Quality Control for Screening Data Collection**

Operating procedures for OVMs, conductivity meters, and other field instruments require the use of calibration gases or solutions. The manufacturer’s instructions or the Regional standard operating procedures should specify the method for and frequency of continuing calibration during use of field measurement instruments. Actual frequency during use should meet or exceed these levels.

#### **IDENTIFICATION OF DATA CATEGORIES FOR A PROJECT**

The selected Data Category(ies) should be decided upon during the project’s systematic planning process. As stated earlier, the Data Category(ies) should correspond to the project’s data objectives. Also, the Data Category(ies) should be documented in the project’s Quality Assurance Plan or Quality Assurance Sampling Plan. Refer to Quality Assurance Technical Bulletins entitled “Systematic Planning Processes for the Removal Program” and “Change in Quality Assurance Policies for the Removal Program” for more detailed discussion of the planning process as well as the contents and completion of QA plans for removals.

#### **REFERENCES**

1. U.S. Environmental Protection Agency, *Quality Assurance Project Plan Control Guidance for Removal Actions*, OSWER Directive 9360.4-01, April 1990.
2. U.S. Environmental Protection Agency, *Data Quality Objectives Process for Superfund*, OSWER Directive

9355.9-01 (Interim Final Guidance), (EPA540/R-93-071), Office of Emergency and Remedial Response, September 1993.

3. U.S. Environmental Protection Agency, *EPA Quality Manual For Environmental Programs*, EPA Manual 5360 A1, Office of Environmental Information, May 2000.
4. U.S. Environmental Protection Agency, *Policy And Program Requirements For The Mandatory Agency-wide Quality System*, Order 5360.1 A2, May 5, 2000.
5. U.S. Environmental Protection Agency, *Changes in Quality Assurance Policies for the Removal Program*, Quality Assurance Technical Bulletin, February 2002. (TBD).
6. U.S. Environmental Protection Agency, *Systematic Planning Processes for the Removal Program*, Quality Assurance Technical Bulletin, February 2002. (TBD).

608. The following end notes: OSWER Directive 9355.9-01, *Quality Objectives Process for Superfund*, September 1993)

1. Measures the precision of the analytical method. An appropriate number of replicate aliquots, as specified in the QA Project Plan (QAPP), are taken from at least one thoroughly homogenized sample, the replicate aliquots are analyzed, and standard laboratory QC parameters (such as variance, mean, and coefficient of variation) are calculated and compared to method-specific performance requirements specified in the QAPP.
2. At least 10 percent of the screening data must be confirmed with definitive data. At a minimum, at least three screening samples reported above the action level (if any) and three screening samples reported below the action level (or as non-detects) should be randomly selected from the appropriate group and confirmed.
3. Measures overall precision of the measurement system, from sample acquisition through analyses. An appropriate number of collocated samples as determined by the QAPP are independently collected from the same location and analyzed following standard operating procedures. Based on these analytical results, standard laboratory QC parameters such as variance, mean, and coefficient of variation should be calculated and compared to established measurement error goals. This procedure may be required for each matrix under investigation, and may be repeated for a given matrix at more than one location at the site.

<sup>‡</sup> Mention of company or product names should not be construed as an endorsement by the U.S. Environmental Protection Agency.